

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Mitsuru KITAMURA

Serial No.: 10/586,705

Group No.: 2872

Filed: July 20, 2006

Examiner: A. Amari

For: COMPUTER HOLOGRAM AND CREATION METHOD THEREOF

Attorney Docket No. U 016399-7

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

SUBMISSION OF BRITISH OFFICE ACTION

Applicant hereby submits a copy of a first Official Letter mailed from the Intellectual Property Office of Great Britain in connection with corresponding British Patent Application No. GB0614671.6.

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8a)

I hereby certify that this correspondence is, on the date shown below, being:

MAILING

- ☐ deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450

FACSIMILE

- ☐ transmitted by facsimile to the Patent and Trademark Office to **(571) 273-8300**

EFS-WEB

- ☒ transmitted electronically

Date: May 18, 2009

Signature

John Richards

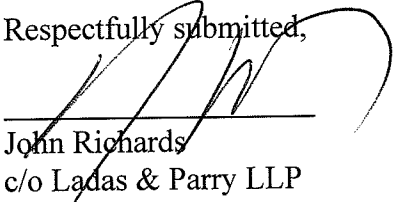
(type or print name of person certifying)

The Official Letter cites three references: U.S. Patent Application Publication No. US 2002/0027702 (Kitamura), JP2000-214750 (Dai Nippon), and JP2002-72838 (NTT). All of these references are on record in the above-identified U.S. application.

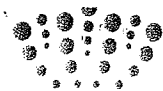
A copy of the Official Letter is attached.

While no fee is believed to be due in connection with this paper, please charge any fee that may be due to Deposit Account No. 12-0425.

Respectfully submitted,



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Your Reference: P/24489.GB/RD
Application No: GB0614671.6

16 January 2009

Dear Sirs

Patents Act 1977: Examination Report under Section 18(3)

Latest date for reply:

18 May 2009

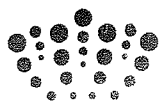
I enclose two copies of my examination report and two copies of the new citation.

You should note that the normal unextended period allowed for complying fully with the requirements of the Act will end on 18 January 2010, that is 12 months after the date of this letter.

By the above date you should either file amendments to meet the objections in the enclosed report or make observations on them. If you do not, the application may be refused.

Yours faithfully

Mr David Maskery
Examiner



Your ref : P/24489.GB/RD
Application No: GB0614671.6
Applicant : Dai Nippon Insatsu Kabushiki
Kaisha

Examiner : Mr David Maskery
Tel : 01633 813545
Date of report : 16 January 2009

Latest date for reply: 18 May 2009

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Patents Act 1977

Examination Report under Section 18(3)

Novelty

1. The invention as defined in claim 17 is not new because it has already been disclosed in the following document:

US 2002/0027702 (KITAMURA et AL) See paragraphs 112 – 116.

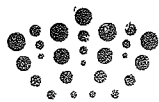
2. US 2002/0027702 describes a computer hologram medium on which an original image is recorded as interference fringes that form a convex and concave structure, wherein a large number of unit areas are defined on the medium, the respective unit areas on the medium are each divided into a first area and a second area, the first area and the second area have a relationship that one forms a convex portion, and the other, a concave portion, interference wave intensity at a position of each unit area is expressed by an occupancy ratio of the first area relative to the unit area, and the respective unit areas are arrayed at a pitch of equal to or less than 400nm as in paragraphs 112 – 116. Hence your invention of claim 17 cannot be novel.

Inventive step

3. The invention as defined in claims 1 - 17 is obvious in view of what has already been disclosed in the following documents:

JP 2000-214750 (DAI NIPPON PRINTING CO)
JP 2002-072838 (NIPPON TELEGRAPH AND TELEPHONE CORP)

4. JP 2000-214750 discloses (see Figures 1-14) a method for creating a computer hologram by forming interference fringes on a predetermined recording surface by a computer-aided operation, said method comprises the steps of: defining a predetermined original image, a recording surface for recording the original image, and a reference light to be irradiated onto the recording surface; defining a large number of calculation points on the recording surface, and calculating, in terms of the individual calculation points, intensity of an interference wave formed by an object light emitted from a light source defined on the original image and the reference light defining a plurality of types of binary patterns each defined by dividing a unit area having a fixed form and size into a first area having a first pixel value and a second area having a second pixel value by changing an occupancy ratio of the first area relative to the unit area as shown in Figure 14, allocating, at positions of the respective calculation points, binary patterns having occupancy ratios corresponding to interference wave intensities in terms of the respective calculation points, respectively and



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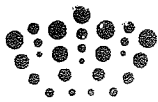
[Examination Report contd.]

creating physical fringes on a medium based on a binary image formed from an assembly of the binary patterns allocated onto the recording surface as described in the entire document. The individual calculation points, can also include the intensity and phase of an interference wave formed by the object light and use three-dimensional cells with the two-dimensional binary patterns having occupancy ratios corresponding to interference wave intensities in terms of the respective calculation points, respectively, and three-dimensional structures capable of phase modulations corresponding to interference wave phases in terms of the respective calculation points. This shows that these features are well known in the art of generating holograms using computers.

5. JP 2002-072838 discloses the use of a pitch for the calculation points defined on the recording surface is set equal to or less than a minimum wavelength of a visible light or 400nm. This shows that the idea of setting the pitch of the points on the surface to be equal or less than a minimum wavelength eg 400nm is known. Thus it would have been obvious to the skilled man in the art to make use of this idea and set the pitch of the points in the method used in JP 2000-214750 be less than or equal to 400 nm. Hence, your invention of claims 1, 6, 9 and 14 lacks the required inventive step.

6. JP 2000-214750 also discloses the use of a rectangle as the unit area, with the binary pattern being formed by arranging the first area formed of a rectangle having a vertical width equal to a vertical width of the unit area and having a horizontal width according to a predetermined occupancy ratio at an approximately centre position with respect to a horizontal width of the unit area and providing a remaining part as the second area. Furthermore, the physical binary patterns are formed by beam scanning using a drawing apparatus with a predetermined resolution, horizontal width sizes of the rectangles forming the first areas of the individual binary patterns are set to be integral multiples of a predetermined unit size L provided in advance within a range where drawing by the drawing apparatus is possible. This shows that these ideas were well known in the art and would have been obvious to the skilled man to use when generating a hologram. Hence, your invention of claims 2, 3, 10 and 11 lacks the required inventive step.

7. Furthermore JP 2000-214750 also discloses, the horizontal width sizes of the rectangles forming the unit areas are set so as to be n times as great as the unit size L (n is an integer), $(n+1)$ types of binary patterns such as to have horizontal width sizes of the rectangles forming the first areas 0 times, 1 time, 2 times, ... n times as great as the unit size are prepared, and the binary patterns are allocated to interference wave intensities sectioned in $(n+1)$ levels in a corresponding manner, respectively, and where a minimum drawing size determined based on drawing resolution of the drawing apparatus is provided as h , a horizontal pitch of the calculation points is set so as to be equal to or less than the minimum wavelength of a visible light and equal to or more than $h \times n$. The rectangles also have a vertical width equal to a vertical pitch of the calculation points and a horizontal width equal to a horizontal pitch of the calculation points are used as the unit areas, reference points common to all the unit areas are provided, the individual binary patterns are allocated so that the respective reference



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[Examination Report contd.]

points are arranged on the respective calculation points so that the binary patterns are allocated across an entire surface of the recording surface, and the vertical pitch and the horizontal pitch of the calculation points are both set so as to be equal to or less than the minimum wavelength of a visible light. This shows that these ideas were well known in the art and would have been obvious to the skilled man to use with the method used when generating a hologram. Hence, your invention of claims 4, 5, 12 and 13 lacks the required inventive step.

8. JP 2000-214750 also discloses a computer program for creating a binary image of the hologram according to claim 1 and the computer hologram medium on which a computer hologram created by the method according to claim 1 is recorded. This shows that these ideas were well known in the art and would have been obvious to the skilled man to use with the method used when generating a hologram. Hence, your invention of claims 7, 8, 15, 16 and 17 lacks the required inventive step.

Other matters

9. I have attempted to consider your claims in light of the citations JP 2000-214750 and JP 2002-072838 cited on the International Search Report without the aid of a formal translation as there are no English language equivalent family members. If I believe that it is necessary to consider the description of this document in more depth to establish its relevance to any amended claims I may in future request that you supply a translation as provided for by Rule 113(5). If you already have a translation it may expedite proceedings if you could supply a copy of it when you respond to this report.